U.S. FISH AND WILDLIFE SERVICE - SPOTLIGHT SPECIES ACTION PLAN

Common Name: Chiricahua leopard frog

Scientific Name: *Lithobates chiricahuensis*

Lead Region: 2

Lead Field Office: Arizona Ecological Services Office

Species Information:

Status: Threatened

Recovery Priority Number or Listing Priority Number: 2C (Recovery Priority #)

Recovery Plan or Candidate Assessment Form: "Chiricahua Leopard Frog (*Rana chiricahuensis*) Recovery Plan". April 2007.

Most Recent 5-year Review: Ongoing, final due in 2009

Other: Final Listing and 4(d) Rules (67 FR 40790)

Threats: The primary threats are predation by introduced predators (American bullfrogs, crayfish, fishes, and tiger salamanders) and an apparently introduced fungal skin disease (chytridiomycosis or "*Bd*") that is a proximal cause of amphibian decline around the globe. Both of these threats are very difficult to ameliorate; however, the recovery plan presents several options for management as well as research into techniques to address these recovery challenges. Also of importance are degradation and loss of habitat as a result of drought, water diversions and groundwater pumping; past management practices that have increased the likelihood of crown fires; mining; development; environmental contamination; disruption of metapopulation dynamics; climate change; and increased chance of extirpation or extinction resulting from small numbers of populations and the dynamic nature of frog habitats. Past livestock-management practices have degraded some habitats, but current practices (e.g., maintenance of stock tanks) have created habitat for the species.

Target: The 5-year target is to improve the conservation status of the Chiricahua leopard frog by stabilizing, securing, and augmenting existing populations and establishing additional populations. This target will help meet recovery criterion 1 (at least two metapopulations in different drainages, as well as an isolated but robust population in each of the eight recovery units). As a part of this strategy, we will need to advance our knowledge and abilities, through research and adaptive management, of how to deal with the threats of *Bd* and non-native predators. In addition to work in Arizona and New Mexico, we propose to begin recovery actions in Mexico.

Measure:

The following success criteria will allow evaluation of whether this action plan is achieving its target.

Over the period of 2009-2014 we will:

1) Increase the number of breeding populations by at least 20 percent in both Arizona and New Mexico (these numbers are currently being quantified for 2008, and need to be quantified annually through proposed population monitoring).

2) Establish secure, refugia populations for genetically or regionally important populations at high risk of extirpation.

3) Increase the number of metapopulations by at least one in both Arizona and New Mexico.

4) Increase the number of isolated but robust populations by at least two in both Arizona and New Mexico.

5) Make progress towards assessing population status and threats, and initiate recovery actions, in the Mexican portions of recovery units 1, 2, and 3.

6) Monitor populations and recovery implementation, and provide annual reports summarizing monitoring data.

7) Initiate or complete research that will help us better manage the threats of *Bd* and non-native predators.

Actions: The following critical actions must be implemented over the next 5 years to meet the species' target.

Action	**Threat/Listing Factor Addressed**	**Responsible Party**	**Estimated Cost**
1. Identify and address threats to existing breeding populations (recovery tasks 1.1, 1.2.1-1.2.18)	Stem the loss of breeding populations, which are critical to recovery. Addresses listing factors A, C, D, and E.	USFWS AZ and NM Ecological Services will be primary responsible parties; however, land managers (esp. the Forest Service, but also the BLM, National Wildlife Refuges, and private landowners) and also the State Game and Fish agencies will be critical to implementing these actions.	$1.37 million over 5 years (estimated costs taken from the Implementation Schedule in the Recovery Plan)
2. Establish refugia populations as needed to conserve genetically or regionally important frog populations at risk of extirpation (adapted from recovery task 1.3).	Stem the loss of genetically important populations, or populations that are representative of management areas, recovery units, or other regional metrics. Primarily addresses listing factors A and E.	Primarily USFWS AZ and NM Ecological Services; however, we will need partners, such as Forest Service, the Ladder Ranch, other public and private lands, as well as Zoos and Museums to establish and manage the refugia	The Recovery Plan estimates $55,000 over five years for this action. However, the number of populations needing backup populations is not yet clear. That number will be determined through proposed monitoring, but it will likely change

		populations.	over time.
3. Establish or reestablish populations of frogs in strategic places and habitats so that progress is made towards increasing the number of metapopulations and isolated but robust populations (recovery tasks 2.1-2.7 and 3.1-3.3).	This action addresses all threats by increasing the viability of the species across the landscape in spite of disease, non-native predators, habitat degradation, and other challenges. Addresses listing factors A, C, D, and E.	USFWS AZ and NM Ecological Services, State Game and Fish agencies, and rearing and captive propagation facilities, such as at the Phoenix Zoo, Arizona-Sonora Desert Museum, Fort Worth Zoo, Ladder Ranch, Bubbling Ponds Fish Hatchery, and Douglas High School.	The Recovery Plan estimates $219,000 over five years for this action. This figure may need to be increased depending on restoration work needed at selected reestablishment sites. Much of this work is currently being conducted by our partners with little or no Federal funds.
4. Augment populations as necessary to ensure persistence of existing breeding populations (see action 1 above) and reestablished populations (see action 3 above). From recovery tasks 4.1-4.5.	This action addresses all threats by increasing the viability of the species across the landscape in spite of disease, non-native predators, habitat degradation, and other challenges. Addresses listing factors A, C, D, and E.	USFWS AZ and NM Ecological Services, State Game and Fish agencies, and rearing and captive propagation facilities, such as at the Phoenix Zoo, Arizona-Sonora Desert Museum, Fort Worth Zoo, Ladder Ranch, Bubbling Ponds Fish Hatchery, Southwest Research Station, and Douglas High School.	The Recovery Plan estimates $85,000 over five years for this action. However, this is an adaptive management action, which would be implemented as needed to ensure population persistence. Much of this work is currently being conducted by our partners with little or no Federal funds.
5. Assess population status and threats at historical frog localities, search for new localities, and explore recovery opportunities in the Mexican portions of recovery units 1, 2, and 3 (recovery actions 11.1 and 11.2).	This action addresses all threats in that it creates an information base from which we can then develop appropriate strategies to address threats and conserve the species in Sonora and Chihuahua. Currently, very little is known of the status of the species in Mexico. Addresses listing factors A, C, D, and E.	Mexican partners (e.g. Naturalia, Pronotura, Universidad Nacional Autónoma de México [UNAM], La Comisión de Ecología y Desarrollo Sustentable del Estado de Sonora [CEDES], La Comisión Nacional de Áreas Naturales Protegidas [CONANP]) with support from USFWS and other U.S. partners	$25,000 (based on cost estimates from J. Lemos Espinal, UNAM, Tlalpnepantla, Mexico).

6. Monitor population status and threats, as well as recovery implementation (recovery actions 5.1, 5.2, 5.3, and 5.4).	This action addresses all threats (listing factors A, C, D, and E) in that it identifies problem areas where threats need particular attention. This would be a continuation and expansion of current monitoring carried out by State and Federal agencies, as well as other partners.	State Game and Fish agencies, U.S. Forest Service, and others with support from the USFWS. The State Game and Fish agencies are the likely data repositories; however, data will be collected by a variety of partners. Annual reports need to be prepared by the States or the USFWS in coordination with the recovery team.	The cost of monitoring is undefined in the recovery plan (to be determined); and will be dependent upon a variety of factors, including, among others, the number of populations extant and their accessibility and ease of monitoring; however, an estimated several hundreds of thousands of dollars will be needed over five years.
7. Initiate or complete research that will help us better manage the threats of *Bd* and non-native predators. In regard to *Bd*, work is needed to investigate the use of possibly disease-resistant animals for reestablishment projects where disease is a major limiting factor for recovery. An important aspect of this work is the ability to test frogs for *Bd*.	Addresses threats of disease and predation (listing factor C).	Need to further engage University or USGS researchers in these topics. The Recovery Plan lists potential researchers (see "RES" in Implementation Schedule, page 94). Fisheries (Dexter National Fish Hatchery and Technology Center) has the facilities to test amphibians for *Bd* but needs $20,000 to fully operate the facility.	The Recovery Plan estimates $435,000 over five years to research these topics. Much research is being conducted on *Bd*, but little work is underway to investigate controlling the disease in wild populations. We need to affect the direction of research on this most serious threat to the Chiricahua leopard frog and other amphibians around the globe.

The above actions are the most critical recovery actions needed at this time; however, additional activities are identified in the recovery plan and other important needs may emerge through adaptive management. These activities will occur within the context of a collaborative effort among many public and private partners. This collaboration is facilitated by regular meetings of Local Recovery Groups and annual meetings of three Regional Stakeholder or Steering Committees. The Local Recovery Groups plan and implement on-the-ground recovery actions in specific areas, whereas the Stakeholder or Steering Committees set regional and recovery unit priorities and help put the local efforts into the context of recovery of the species and meeting the recovery criteria.

Role of other agencies: Recovery cannot be accomplished by the USFWS alone. The Forest Service owns and manages most of the historical and currently occupied habitat of this species in the United States. As a result, continued USFS involvement is crucial. Other landowners and

managers, such as wildlife refuges, Bureau of Land Management, and many private parties also play an important role in recovery. The Arizona Game and Fish Department and New Mexico Department of Game and Fish have conducted many of the surveys and recovery actions to date; progress on recovery will not be possible without their continued participation. Additional funding above the current staffing levels is needed for these State agencies. The contributions of the Phoenix Zoo, Fort Worth Zoo, Arizona-Sonora Desert Museum, Ladder Ranch, Douglas High School, and other rearing/propagation facilities are another crucial element in moving forward with recovery. Many of these public and private entities are facing budget and staffing shortfalls in the current economic crisis. They will likely need financial help if they are to continue or increase their recovery efforts for the Chiricahua leopard frog.

We will also need to work with Mexican partners in Sonora and Chihuahua. The Mexico Program at Arizona Ecological Services Office is the logical choice to develop these partnerships and seek funding for work in Mexico.

Role of other ESA programs: The greatest threats to the species (disease and non-native predators) require pro-active work and are generally not addressed well by section 7 consultations, which aim to reduce adverse effects mostly from activities that degrade habitats. An exception is the consultation on the Bureau of Reclamation's Central Arizona Project, which in 2009 or 2010 will provide $100,000 for Chiricahua leopard frog recovery. Additional funds are expected from recent biological opinions and agreements with Department of Homeland Security regarding construction and operation of border infrastructure. Some commitments for monitoring, habitat improvements, and other recovery actions were obtained through the Forest Service "LRMP" biological opinion and grazing opinions, but implementation on some forests has been hampered by budget shortfalls.

Three Safe Harbor Agreements are in place throughout the range of the species in Arizona and southwestern New Mexico, and a Habitat Conservation Plan covering the species was recently signed for the Malpai Borderlands region of southeastern Arizona and southwestern New Mexico. These plans and agreements make it easier to work with private entities by removing certain liabilities for landowners that wish to voluntarily participate in recovery. A Safe Harbor Agreement for west-central New Mexico should be pursued. The frog is also covered by a 4(d) rule that exempts operation and maintenance of livestock tanks on non-federal lands from the section 9 incidental take prohibitions. This also makes it easier for us to work with private, State, and Tribal partners.

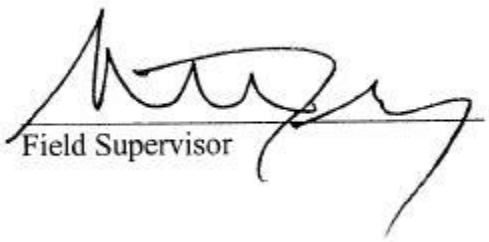
The section 6 program has provided some funding to the States in both New Mexico and Arizona for Chiricahua leopard frog survey, monitoring, and recovery. These funds have played an important role, but are only enough to augment or provide matching funds for other moneys. In recent years, section 6 funds in Arizona have not been available for Chiricahua leopard frogs.

Role of other FWS programs: Refuges have played a key role in conserving the species. Currently the best metapopulation anywhere within the range of the species occurs at Buenos Aires National Wildlife Refuge, although that population is under continual threat from bullfrog invasion. Lesley Canyon National Wildlife Refuge supports one of the last known breeding populations of the species in recovery unit 3. Work at Buenos Aires and San Bernardino refuges have contributed greatly to our knowledge of how to control bullfrogs, and the refuge manager of San Bernardino/Leslie Canyon NWRs was instrumental in the Malpai HCP and Barboot/99 Bar Safe Harbor Agreement. Federal hatcheries could potentially become involved in captive rearing

or propagation, and Fisheries has facilities to test amphibians for *Bd*, but currently lacks funding to conduct the testing.

The Partners for Fish and Wildlife Program has been and will need to be a source of funding for recovery actions if the above activities are to be accomplished. The Partners Program has been an important tool for creating and enhancing habitats on private lands, but also in developing captive rearing and propagation facilities.

Additional funding analysis: The actions identified above are only a subset of the actions identified in the recovery plan for the first five years of the recovery program. Total costs for 5 years of recovery implementation were $3,413,000, not including to-be-determined costs, versus the $2,189,000 plus monitoring costs described above. Significant additional costs needed to fully implement the recovery plan include, among others, working with land managers and partners to restore natural fire cycles ($250,000), improving watershed quality through changes in land management (>$100,000), and maintaining aquatic habitat quality at not only existing populations, but also sites with potential for reestablishments (hundreds of thousands of dollars). Currently, two USFWS biologists, one in New Mexico and one in Arizona, devote a relatively small amount of their time to Chiricahua leopard frog recovery, with the help of some other staff. If this recovery program was funded as recommended herein or in the recovery plan, current staffing would be inadequate to expend those funds. For a comprehensive recovery program to function well, USFWS should fund a recovery coordinator who could work full time to develop agreements and contracts, coordinate the three recovery team Steering Committees and Local Recovery Groups, and seek additional funding and work with partners to accomplish recovery. If USFWS were able to devote a full-time position and funding for recovery actions as recommended herein, the Chiricahua leopard frog recovery could soon be well on its way to recovery.



Field Supervisor

8/28/09

Date